IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	Confirmation No. 6940
Masami SUWAMA et al.	:	Docket No. 2004-0483A
Serial No. 10/808,437	:	Group Art Unit 1762
Filed: March 25, 2004	:	Examiner W.P. Fletcher, III

PAINT FILM FORMING METHOD

DECLARATION UNDER RULE 1.132 (No. 2)

Honorable Commissioner of
Patent and Trademarks
Washington, D.C.

Sir:

I, Masami Suwama, hereby declare as follows:

That I graduated, in March 1989, at Keio University, Department of Science and Engineering, and, in April of the same year, joined Kansai Paint Co., Ltd., where I was assigned to the Research Institute in the Development Center of the same company;

That I have since engaged in the research for the development of paint in the same Research Institute up to now;

That I am one of the co-inventors of U.S. Application Serial No. 10/808,437;

That the following experiments were carried out by myself, or under my supervision and control.

1. Production of hydroxyl-containing resins and oligomer:

1-1. Acrylic resin Nos. A-1 to A-10 were produced with use of monomer mixture of the composition as shown in Table 1B below, by the method of Production Example 1 as mentioned in the present specification, page 17, line 17 to page 18, line 7.

1-2. "Oligomer No. 1" was produced in accordance with the present specification, page 20, lines 1–13. Solids content was 98 %, number average molecular weight was 600, and weight average molecular weight was 610.

1-3. "Hydroxyl group-containing polyester oligomer" was produced in accordance with Synthesis Example 1 in column 38, lines 35–55, of Marutani et al., U.S. Patent 6,040,009. Solids content was 95 %, number average molecular weight was 600, and weight average molecular weight was 600.

Table 1B

Acrylic resin (solids content 60 %)		No. A-1	No. A-2	No. A-3	No. A-4	No. A-5	No. A-6	No. A-7	No. A-8	No. A-9	No. A-10
Monomer (c)	Styrene	25	25	25	25	30	25	25	25	25	25
	Methyl methacrylate	10	10	10	10	10	10	10	10	10	10
	n-Butyl acrylate	5	5	5	5	5	5	5	5	5	
	Isobutyl methacrylate	18	10	18	11	25	13	18	10	10	13
	Acrylic acid	2	2	2	2	2	2	2	2	2	
Monomer (a)	4-Hydroxybutyl acrylate	5	5	5	5		20	5	5	5	5
	FM-3 (note 1)	5	23	23	5	14			28	35	2
Monomer (b)	2-Hydroxypropyl acrylate	15	15	7	32	14	5	15	10	3	40
	2-Hydroxypropyl methacrylate	15	5	5	5		20	20	5	5	5
	Di-*tert*-butylhydroperoxide	8	8	8	8	8	8	8	8	8	8
Special property	Solids content (%)	60	60	60	60	60	60	60	60	60	60
	Acid value (mgKOH/g)	16	16	16	16	16	16	16	16	16	16
	Hydroxyl value (mgKOH/g)	149	131	97	158	77	177	167	135	86	211
	Weight-average molecular weight (Mw)	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000
NOTE		Monomer (a): 10 %	Monomer (a): 28 %	Monomer (b): 12 %	Monomer (b): 37 %	Hydroxyl value 77 mgKOH/g	Hydroxyl value 177 mgKOH/g	Monomer (a): 5 %	Monomer (a): 33 %	Monomer (b): 8 %	Monomer (b): 45 %

(note 1) FM-3™: Daicel Chemical Industries, Ltd., ε-caprolactone-modified vinyl monomer of 2-hydroxyethyl acrylate

2. Production of clear paint Nos. C-1 to C-13:

Clear paint Nos. C-1 to C-13 were produced by the blending of components as shown in Table 2B below, in accordance with the method of Example 1 as mentioned in the present specification, page 20, lines 15–20.

Table 2B

Clear paint		No. C-1	No. C-2	No. C-3	No. C-4	No. C-5	No. C-6	No. C-7	No. C-8	No. C-9	No. C-10	No. C-11	No. C-12	No. C-13
Acrylic resin (A)	Acrylic resin No. A-1	60				60							60	60
	Acrylic resin No. A-2		60											
	Acrylic resin No. A-3			60										
	Acrylic resin No. A-4				60									
	Acrylic resin No. A-5						60							
	Acrylic resin No. A-6							60						
	Acrylic resin No. A-7								60					
	Acrylic resin No. A-8									60				
	Acrylic resin No. A-9										60			
	Acrylic resin No. A-10											60		
Curing agent (B)	Desmodur™ N3300 (note 2)	40	40	40	40	40	40	40	40	40	40	40	40	40
Oligomer (C)	Oligomer No. 1	10	10	10	10	20	10	10	10	10	10	10		
	Hydroxyl group-containing polyester oligomer													10

(note 2) Desmodur™ N3300: Sumika Bayer Urethane Co., Ltd., isocyanurate type hexamethylene diisocyanate

3. Test:

Test panels were produced in accordance with the present specification, page 22, line 1 to page 25, line 11, and, thus, performances of each coating film were evaluated. Results are shown in Table 3B below.

Table 3B

Run No.			1	2	3	4	5	6	7	8	9	10	11	12	13
Test panel			No. P-1	No. P-2	No. P-3	No. P-4	No. P-5	No. P-6	No. P-7	No. P-8	No. P-9	No. P-10	No. P-11	No. P-12	No. P-13
Results	Pot life of clear paint (note 3)		○	○	○	○	○	○	×	○	×	×	○	○	○
	Gel fraction ratio (note 4)	60°C-10 min.	90	90	90	90	90	65	85	70	90	90	80	90	85
		80°C-40 min.	96	96	96	96	96	88	94	94	93	93	93	94	93
	Pencil hardness of paint film (note 5)	60°C-10 min.	H	H	H	H	H	B	HB	B	H	H	B	H	HB
		80°C-40 min.	2H	2H	2H	2H	2H	HB	H	HB	2H	2H	H	2H	2H
	Tackiness of paint film (note 6)	60°C-10 min.	○	○	○	○	○	×	△	×	○	○	×	○	△
		80°C-40 min.	○	○	○	○	○	△	○	○	○	○	○	○	○
	Adherability (note 7)	60°C-10 min.	○	○	○	○	○	×	△	×	○	×	○	×	△
		80°C-40 min.	○	○	○	○	○	△	○	○	○	○	○	○	○
	Finished appearance (note 8)	60°C-10 min.	○	○	○	○	○	△	△	○	△	△	△	△	△
		80°C-40 min.	○	○	○	○	○	○	△	○	△	○	△	△	○
NOTE			Monomer (a): 10 %	Monomer (a): 28 %	Monomer (b): 12 %	Monomer (b): 37 %	Oligomer No. 1: 20 %	Hydroxyl value 77 mgKOH/g	Hydroxyl value 177 mgKOH/g	Monomer (a): 5 %	Monomer (a): 33 %	Monomer (b): 8 %	Monomer (b): 45 %	Oligomer No. 1: 0 %	Hydroxyl group-containing polyester oligomer used (10 %)

Run Nos. 1–5: in accordance with the present invention

Run Nos. 6–13: for comparison

The undersigned declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application of any patent issuing thereon.

Signed this 13 th day of July 2007

Masami SUWAMA

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